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EXAMINER

NIA, ALIREZA

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-8 and 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krauter 5,464,007 in view of van der Heide 5,388,568 further in view of Opie 4,825,850.**

3. With respect to claims 1 and 12-14, Krauter discloses a control mechanism 15 for an endoscope 10 having a flexible shaft 11 comprising, a frame 19,28, a first 24 and second 34 movement transmission devices for causing adjustment of a distal end 11 of the flexible shaft 11, a first control knob 20, a first rotatable pinion shaft 17,21 mounted on said frame 18,28 and fixed to said first control knob 20, said first pinion shaft 17,21 engaging with said first movement transmission device 24 such that upon rotation of said first control knob 20, said first pinion shaft 17,21 rotates and said first movement transmission device 24 is actuated. Krauter also discloses a second control knob 26 rotatable independent of said first control knob 20, a second rotatable pinion shaft 18,27 engaging with said second movement transmission device 34 such upon rotation of said second control knob 26, said second pinion shaft 18,27 and said second movement transmission device 34 is actuated (col. 3, lines 31-67, cols. 4-6, lines 67, figs. 1,4, 5,21,22). Moreover, Krauter further discloses at least one O-ring 111, 114, 116 arranged in contact with an intermediate shaft and other shafts or surfaces for the purpose of reducing or

avoiding the transmission of torque between pinion shafts (col. 7, lines 21-22) as well as to create seals (col. 7, lines 19-20).

4. However, Krauter fails to positively disclose an intermediate shaft arranged at least partially inside of said second pinion shaft and at least partially around said first pinion shaft, said intermediate shaft being arranged to reduce transmission of torque between said first and second pinion shafts such that rotation of one of said first and second pinion shafts does not cause rotation of the other of said first and second pinion shaft. Krauter also fails to disclose fixing means for fixing said intermediate shaft against rotation.

5. Van der Heide teaches an intermediate shaft 6a arranged at least partially inside of a second pinion shaft 6 and at least partially around a first pinion shaft 8 in an analogous control mechanism for an endoscope having a flexible shaft. Van der Heide also teaches the intermediate shaft 6a is arranged to reduce transmission of torque between first 8 and second 6 pinion shafts such that rotation of one of said first 8 and second 6 pinion shafts does not cause rotation of the other of said first 8 and second 6 pinion shafts (col. 2, lines 35-68, col. 3, lines 1-68, fig. 1), resulting in an improved and low-cost manipulator assembly for an endoscope which in addition to its capability of being controlled with one hand, it facilitates the easy disconnection of the manipulator's click mechanism of both control knobs with only one hand (col. 1, lines 40-47).

6. It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the control mechanism of Krauter with the above discussed limitations as taught by van der Heide in order to have provided an improved and cheaply manufactured manipulator assembly for an endoscope which in addition to its capability of being controlled

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with one hand, it facilitates the easy disconnection of the manipulator's click mechanism of both control knobs with only one hand, providing greater and optimum efficiency in an operating facility while facilitating a quicker and more efficient sterilization of the endoscope.

7. With respect to the recitation "said intermediate shaft being axially unrestrained such that movement of said intermediate shaft in an axial direction is possible" on line 21-23 of claim 1, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the intermediate shaft such that it would not have been fixed in order to have made it possible for the intermediate shaft to have been separable, adjustable, rotatable, or even in order to have made it easier to repair the control mechanism as desired, since it has been held that the separation of elements, where removability would be desirable, is a design consideration within the skill of the art. In re Dulberg, 283 F.2d 522, 129 USPQ 348 (CCPA 1961). It has also been held that adjustability, where desirable, is a modification that is within the skill of the art. In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954).

8. Krauter in view of Van der Heide discloses the invention as discussed above. However, Krauter in view of van der Heide fails to positively disclose first ball bearings arranged between the intermediate shaft and one of the first and second pinion shafts for enabling rotation of said one of said first and second pinion shafts relative to said intermediate shaft. Krauter in view of van der Heide also fails to positively disclose a nut fixed to said frame, additional ball bearings arranged between said second pinion shaft and said frame for rotatably mounting said second pinion shaft to said frame and at least one hard spacer arranged between said nut and said additional ball bearings to allow floating of said intermediate shaft. Moreover, Krauter in view

of van der Heide fails to positively disclose a preload spring arranged between said nut and said additional ball bearings, said additional ball bearings being preloaded.

9. Opie teaches ball bearings 160 arranged between an intermediate shaft 150,154 (cylindrical portion) and a first shaft 170,172 (cylindrical portion) in an analogous control mechanism for an endoscope having a flexible shaft, wherein the ball bearings 160 enable rotation of the first shaft relative to the intermediate shaft (cols. 7-8, lines 1-68, fig. 6). Opie further teaches a nut 260 (col. 9, line 12) fixed to a frame, additional ball bearings 244,246 (col. 8, lines 64-65) arranged between a second shaft and a frame (two surfaces) for rotatably mounting the second shaft to the frame (the two surfaces), at least one spacer 138 for floating a member (col. 7, lines 60-62), and a preload spring 240,242 arranged between additional ball bearings 244,246 and nut (fig. 6), said additional ball bearings being preloaded via 240,242 (col. 8, lines 64-65, col. 9, lines 1-68), resulting in an improved endoscope having easily removable wheels so that the wheels can be either sterilized or discarded after use (col. 3, lines 60-63).

10. It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the device of Krauter in view of Van der Heide with the above discussed limitations as taught by Opie in order to have provided an improved endoscope having easily removable wheels so that the wheels can be either sterilized or discarded after use, facilitating the longevity and durability of the endoscope device for long period of time which results in long-term cost savings for outpatient surgical centers.

11. With respect to claims 2-8 and 15-19, Krauter in view of van der Heide in view of Opie discloses the invention as discussed above. Krauter further teaches at least one O-ring 111, 114, 116 arranged in contact with an intermediate shaft and other shafts or surfaces for the purpose of

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reducing or avoiding the transmission of torque between pinion shafts (col. 7, lines 21-22) as well as to create seals (col. 7, lines 19-20) resulting in an improved braking system used in steering mechanisms of endoscopes. Krauter also teaches at least one circumferential groove (figs. 4,5,28) for receiving the taught O-rings 111, 114, 116. Moreover, Krauter further teaches at least one circumferential groove (figs. 4,5,28) for receiving the taught O-rings 111, 114, 116 arranged to be in contact with an intermediate shaft and other shafts or surfaces for the purpose of reducing or avoiding the transmission of torque between pinion shafts (col. 7, lines 21-22) as well as to create rotary seals (col. 7, lines 19-20).

12. With respect to the arrangement of the O-rings and their respective grooves with respect to the pinion and intermediate shafts, it would have been obvious to one of ordinary skill in the art at the time of the invention to have rearranged the location of the O-rings and the grooves such that the desired outcome would have been achieved, since it has been held that rearranging parts of an invention involves only routine skill in the art, *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (MPEP 2144.04 VI C).

13. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krauter 5,464,007 in view of van der Heide 5,388,568 in view of Opie 4,825,850 further in view of Hall 3,788,303.

14. Krauter in view of van der Heide in view of Opie discloses the invention as discussed above. However, Krauter in view of van der Heide in view of Opie fails to positively disclose a fixing means for fixing said intermediate shaft against rotation. Also, Krauter in view of van der Heide in view of Opie fails to positively disclose the fixing means comprises a pin attached to said frame and extending into a slot formed in said intermediate shaft.

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15. Hall, teaches an analogous control device which includes a fixing means 55 for fixing a intermediate shaft against rotation (col. 4, lines 53-61), the fixing means 55 comprising a pin 58 attached to a frame and extending into a slot 59 formed in an intermediate shaft (col. 4, lines 53-61) for use in a flexible endoscope to permit ready deflection of the endoscope in an infinite number of planes by means of a single handle control.

16. It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the device of Krauter in view of van der Heide in view of Opie with the above discussed limitations as taught by Hall in order to provide a control device in an flexible endoscope that is simple and compact, having its parts so constructed and arranged as to permit ready deflection of the endoscope in an infinite number of planes by means of a single handle.

17. Claim 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Krauter 5,464,007 in view of van der Heide 5,388,568 in view of Opie 4,825,850 further in view of Rio 2003/0219184.

18. Krauter in view of van der Heide in view of Opie discloses the invention as discussed above. Krauter in view of van der Heide in view of Opie fail to positively disclose a second ball bearings arranged between said intermediate shaft and another one of said first and second pinion shafts for enabling rotation of said other one of said first and second pinion shafts relative to said intermediate shaft.

19. Rio teaches a second ball bearings 10,20,80 0031-0042] for use in medical and surgical instruments [0004], the second ball bearings 10,20,80 being arranged between an intermediate shaft 24 and a first or second pinion shaft 22 (shaft) for enabling rotation of first or second shaft 22 relative to the intermediate shaft 24 (fig. 2), resulting in an advanced medical instrument that

comprises improved bearings having larger diameters and enhanced wear attributes, that are characterized as easy to manufacture, less expensive than already known bearings, are maintenance free as well as reliable, [0010].

20. It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the device of Krauter in view of van der Heide in view of Opie with the above discussed limitations as taught by Rio in order to have provided an advanced, low-cost, and reliable endoscopic surgical instrument that comprises improved bearings that are characterized as easy to manufacture, less expensive than already known bearings, and are maintenance free as well as reliable, having a long operational life, providing significant operational cost savings to medical facilities.

Response to Amendment

21. The amendments to claims 1, 12-14, 20-21, the cancellation of claim 11, and the addition of new claim 22 in the response filed March 27th, 2008 is acknowledged.

Response to Arguments

22. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALIREZA NIA whose telephone number is (571)270-3076. The examiner can normally be reached on Mo.-Fri.-7:30 AM-5:00 PM EST-Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda C. Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. N./
Examiner, Art Unit 3739
Alireza Nia
June 27th, 2008

/Linda C Dvorak/
Supervisory Patent Examiner, Art Unit 3739